

**COMPOSITION AND METHOD FOR THE IN SITU  
REMOVAL OF SCALE FROM A SUBSTRATE**

**ABSTRACT OF THE DISCLOSURE**

- 5    **[0058]** A composition and method for the removal of scale from a substrate are disclosed.
- The composition and method are more specifically utilized for the in situ removal of  
silicate-containing scale from interior surfaces of boilers and other heat exchange  
equipment. The silicate-containing scale is deposited in the boilers as silicate-sulfate  
complexes of calcium, magnesium, aluminum, and other metal atoms that are present in  
10    water. The composition, which is circulated throughout the boiler to contact the interior  
surfaces, such as the boiler tubes, includes a chelating agent having at least two  
carboxylic acid functional groups, preferably citric acid. The composition also includes  
an alkali metal hydroxide basic agent. The preferred alkali metal hydroxides are either  
potassium or sodium hydroxide. The basic agent establishes an overall basic pH of from  
15    7 to 14 in the composition to enable precipitation of the metal atoms from the  
composition after interaction with the chelating agent.